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PCT/NZ2004/000187

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I hereby certify that annexed is a true copy of the Provisional Specification as filed on 15 August 2003 with an application for Letters Patent number 527666 made by VAUGHAN JOHN HUTCHINSON.

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Dated 1 September 2004.

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527666

PATENTS FORM NO. 4

Appln Fee: $50.00
Pipers Central Ref: 12-2365NZ

PATENTS ACT 1953

PROVISIONAL SPECIFICATION

IMPROVEMENTS IN AND RELATING TO STORAGE DEVICES

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do hereby declare this invention to be described in the following statement:

IMPROVEMENTS IN AND RELATING TO STORAGE DEVICES

Technical Field

The present invention is directed to improvements in and relating to storage devices.

In particular, the invention relates to aspects of the features, manufacture and operation of an improved storage device for the managing and storing of a range of flex, chord, flexible tubing made of plastics material and so forth. Accordingly, such a device may therefore be used for electrical extension leads, for garden hoses, for rope, for rubber tubing, for gas hoses associated with various types of equipment, such as air hoses, hoses for welding equipment and the like.

It is envisaged the storage device will be used to store such leads, rope and so forth in a manner that enables the leads to be safely and neatly stored until use, yet enables the lead to be unwound from the device in a tangle-free manner.

However, it should be appreciated that this invention may have applications outside this field.

Background Art

A reel, or spool, is one of the most basic means of storing hoses, flexes, electrical extension chords, tubing, rope and so forth. A reel is a mechanical object, or frame, which is typically circular, or cylindrical, turns on an axis and on to which a chord, lead, hose, or flex and so forth is wound. The design of the reel may vary depending on the chord, flex, or hose with which it is used and the particular requirements of the hose, flex, or chord. Most noticeably however, is that most reels operate in use in a rotatable manner. As the body of the reel rotates, so is the chord, flex or hose wound on, or off, the reel. Some reels may be fixed, but these are less practical where substantially long lengths of hose, flex, or chord are required to be wound on, or off, the reel.

A reel is typically designed to include a central, horizontal cylinder, at each distal end of which are vertical faces, typically circular and substantially perpendicular to the central axis of the cylinder. The cylinder defines the width of the reel, whilst the end faces define the height to which a chord, or similar, may be wound on to the reel.

Accordingly, as a chord, hose, or lead is wound on to a reel, the chord will rotate around the central cylinder with each successive loop being horizontally and/or vertically adjacent to previous loops. Where electrical extension leads, or flexes, are to be used, it is important to fully unwind the lead from the reel to minimize the likelihood of electrical resistance of the due to the electrical current causing overheating of the lead where it is in close contact with, or overlapping, adjacent sections of lead. Overheating due to such coil effect may result in damage to and/or failure of the insulating sheath of the electrical lead. This is potentially hazardous to the user.

When the chord, hose, or lead is unwound from the reel the period of storage and the material from which the chord, lead, or hose is made, will dictate whether the unwound chord retains a predisposition to a circular orientation. This predisposition to curl into a circular orientation after the flex, chord, or hose is unwound, can be frustrating where a straight extension of the chord, flex, or hose is required. Further, where hoses are concerned, attempts to stretch the hose out to straighten it invariably leads to kinks. These above described situations prove frustrating and are recognised disadvantages of prior art reel systems.

A further disadvantage is that the reel with, or without, the hose, lead, or chord is a bulky device that is not easily, nor conveniently stored. The problem is exacerbated where the reel includes a protruding handle used to turn the reel to wind the hose, chord, or lead on to the reel drum.

Yet another disadvantage relates to the fact that such reels typically via their actual design and mode of operation, include moving parts. The potential for wear, damage and breakdown exists and may be greater where the reel is frequently used.

Yet another way that flexes, chords and hoses may be stored is by the user manually looping the flex, chord, or hose, (such as in the user's hand, or on the ground) and then gathering the loops together. The looped flex, chord, or hose may then be simply dropped on the ground, or hung from a hook, nail, or the like. The user may choose to use a tie to keep the loops together, or may just simply leave the looped flex, chord or hose unrestrained. The potential exists however, for the hose, lead, or chord to be damaged through being dragged across the ground, squashed through being stood on, or driven over. The means of storage may also result in damage to the flex, chord, or hose. For example, a lead or hose may be spilt due to the angle of the bend created in the hose, flex, or chord when suspended from a hook, nail, or the like. Where the flex is an electrical extension lead, the potential for damage to the lead becomes a safety hazard.

Further, a common occurrence with subsequent use of the flex, chord, or hose is that as the loops are unwound from one another, the flex, chord, or hose may become twisted, or knotted, making the process of unwinding the flex, chord, or hose, difficult, time consuming and frustrating.

While the present invention has a number of potentially realisable applications, it is in relation to problems associated with existing reel, or storage systems used for electrical extension leads that the present invention was developed. More specifically, it was with the problems associated with twisting, knotting and safety issues when using and storing electrical leads, that the present invention was developed.

Electrical extension leads are commonly used in multiple situations. Such uses include domestic use around the home and garden and in workshops, sheds, or garages; commercial use in trades such as building, plumbing, electrical installations and repairs; industrial use in factories, machine shops and so forth; uses at recreational events, such as outdoor parties, sporting events, craft work, musical events.; and uses in service industries, such as in hospitals where there is a huge range of situations where equipment includes long leads, hoses, tubes and the like and where safety and hygiene are of paramount importance. Additionally, extension leads may be used for a range of other

types of technical equipment, and including filming, or lighting, scenarios for example. In some applications, multiple extension leads may be used. Having a simple system for storing, transportation and for improving ease of accessibility and use of chords, hoses and particularly electrical leads, would benefit the user in terms of time, effort, safety, cost, well-being and so forth.

It would be useful therefore, to have a storage device that:

a) Could have the benefits of being adapted to store chords, flexes, tubes, leads, or hoses of varyingly length; yet

b) Could be easy to operate, transport, or store in accordance with the requirements of a particular situation and requiring minimum time and physical requirements on the part of the user; and

c) Could be used to store such chords, flexes, hoses, tubes, or leads in a manner that, when required to be used, removal from the device may be accomplished without a resulting tangled mess common to prior art system; and

d) Could potentially minimise damage to the integrity of the hose, lead, flex, tube, or chord; and

e) Offered a safe alternative to the storage and use of electrical extension leads, in particular.

It would therefore be advantageous to have an invention that offered at least some if not all of the advantages of the above proposed system. It is therefore an object of the present invention to consider the above problems and provide at least one solution which addresses a plurality of these problems.

Ideally the present invention will also provide a storage device system which allows for the substantially trouble free storage of hoses, flexes and chords of various tools, or

machines in association with the machine, or tool itself, but having some, if not all, of the advantages outlined above.

Ideally the storage device system is suitable for use, or is suitable to being adapted for use, in any situation where hoses, chords, flexes, tubes and leads are currently employed. It is therefore a further object of the present invention to at least provide the public with a useful choice, or alternative system.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only. It should be appreciated that variations to the described embodiments are possible and would fall within the scope of the present invention.

Disclosure of Invention

Whilst the present invention is described with particular reference to the features and use of a storage device for electrical extension leads, it should be appreciated that the invention may also be applicable to and/or be adapted for use with, a range of other leads, hoses, flexes and chords, or other elongate pieces of material capable of being flexible enough to be otherwise wound up.

For the purposes of this specification the term lead shall be used to describe and refer to electric chords and electrical extension leads, in particular. However, for conciseness, it should be appreciated that the term also includes, other chords, hoses for fluids and/or flowable products, flexes, tubes and so forth made of varying materials having appropriate flexibility to enable said chords, hoses, flexes and leads to be used in conjunction with the storage device.

Such leads are typically substantially cylindrical-shaped structures. However, substantially flattened versions do exist. With reference to the present invention the lead used herein to describe the present invention has a cylindrical shape. However, this

should not be seen to limit the application of the present invention only to embodiments with relevance to the present description.

According to one aspect of the present invention, there is provided a storage device for storing at least one lead, said storage device including a body, said body including a substantially elongate backbone and at least one substantially elongate tine interconnected thereto in a substantially parallel arrangement, but separated therefrom by a defined distance to form a substantially uniform U-shaped channel, and latching apparatus to maintain the defined distance between the backbone and the tine during storage of a lead by the storage device.

According to another aspect of the present invention there is provided a storage device for storing at least one lead substantially as described above wherein the said storage device also optionally includes a handle.

According to another aspect of the present invention there is provided a storage device for storing at least one lead substantially as described above wherein the elongate backbone and the tine of the body both include a free top distal end, whilst the bottom distal end provides an interconnecting portion to form the substantially U-shaped channel.

According to another aspect of the present invention there is provided a storage device for storing at least one lead substantially as described above wherein the width of the substantially U-shaped channel formed between the backbone and the tine is defined by the diameter, or width, of the lead.

According to another aspect of the present invention there is provided a storage device for storing at least one lead substantially as described above wherein the width of the substantially U-shaped channel formed between the backbone and the tine is determined to enable only one width of the lead to be fed down the channel at any one time.

According to another aspect of the present invention there is provided a storage device for storing at least one lead substantially as described above wherein subsequent looping of the lead enables further widths of the lead to be fed down the channel such that, with each subsequent loop, the section of lead within the channel sits substantially atop an adjacent previous looped section of the lead.

According to another aspect of the present invention there is provided a storage device for storing leads substantially as described above wherein the latching apparatus is attached towards the top distal end of either the backbone, or the tine.

According to another aspect of the present invention there is provided a storage device for storing leads substantially as described above wherein where the latching apparatus is attached towards the top distal end of the backbone, a potion of the latching apparatus is capable of looping over the top distal end of the tine, or vice versa.

According to another aspect of the present invention there is provided a storage device for storing leads substantially as described above wherein the latching apparatus maintains the defined distance between the backbone and the tine during storage of a lead by the storage device, via preventing the weight of the lead stored within the channel from forcing the backbone and the tine to splay apart from each other.

According to another aspect of the present invention there is provided a storage device for storing leads substantially as described above wherein the latching apparatus may be used as, or adapted to include, a handle for gripping the storage device in use, or for hanging the storage device when being stored.

According to another aspect of the present invention there is provided a storage device for storing leads substantially as described above wherein the handle operates as the latching apparatus.

According to another aspect of the present invention there is provided a storage device for storing leads substantially as described above wherein either, or both, the latching apparatus and the handle are pivotable with respect to the backbone, or the tine.

According to another aspect of the present invention there is provided a storage device substantially as described above wherein additional tines may be included relative to all faces of the backbone, where leads of increased length are required to be stored and can not be accommodated within the channel of a single tine version of the storage device.

According to another aspect of the present invention, there is provided a method of manufacturing a storage device for storing leads, said storage device including a body, said body including a substantially elongate backbone and at least one substantially elongate tine interconnected to said backbone, but separated therefrom by a defined distance to form a substantially U-shaped channel, and latching apparatus to maintain the defined distance between the backbone and the tine during storage of a lead by the storage device, said storage device also optionally including a handle.

According to another aspect of the present invention, there is provided a method of varying the lead storage capacity of a storage device for storing leads, said storage device including a body, said body including a substantially elongate backbone and multiple substantially elongate tines interconnected to said backbone, but separated therefrom by a defined distance to form a number of substantially U-shaped channels, and latching apparatus to maintain the defined distance between the backbone and a tine during storage of a lead by the storage device, said storage device also optionally including a handle.

In one preferred embodiment of the present invention, the storage device is designed to store a single lead. Preferably the body of the storage device is designed to complement the type and length of the lead required to be stored thereon.

Accordingly, the length of the backbone and the length of the tine is determined to accommodate a preferred number of loops of the lead stacked sequentially on top of each other as the lead is looped on to the storage device. The stacking effect of the lead loops one on top of the other is determined by the width of the U-shaped channel created between the spaced apart backbone and tine of the body of the device. The width of the U-shaped channel is, in turn, determined by the width, or diameter, of the lead to be stored on the device.

As previously mentioned, a common occurrence with the use of a stored lead is that as the loops of the lead are unwound the lead may become twisted or knotted, making the process of unwinding the lead difficult, time consuming and frustrating. Further, the period of storage and the material from which the lead is made, will dictate whether the unwound chord retains a predisposition to a circular orientation. This predisposition to curl into a circular orientation after the lead is unwound, can be frustrating where a straight extension of the lead is required. These above described situations prove frustrating and are recognised disadvantages of prior art lead storage systems.

The means of storage may also result in damage to the flex, chord or hose. Where the flex is an electrical extension lead, the potential for damage to the lead becomes a safety hazard.

Accordingly, as a lead is wound on to a reel, the chord will rotate around the central cylindrical drum-shape of the reel with each successive loop being horizontally and/or vertically adjacent to previous loops. A number of sections of lead are therefore often very closely wound and often relatively tightly wound.

Where electrical extension leads are to be used, it is important to fully unwind the lead from such a reel to minimize the likelihood of electrical resistance due to the electrical current passing through the lead causing overheating of the lead where it is in close contact with, or overlapping adjacent sections of lead. Overheating due to such coil effect

may result in damage and/or failure of the insulating sheath of the electrical lead. This is potentially hazardous to the user.

While the present invention has a number of potentially realisable applications, it is in relation to problems associated with existing reel, or storage systems, used for electrical extension leads that the present invention was developed. More specifically, it was with the problems associated with twisting, knotting and safety issues when using and storing electrical leads, that the present invention was developed.

Accordingly therefore, the electrical lead stored on the storage device of the present invention is preferably loosely looped and each successive loop is only touching a portion of a loop of the lead directly above and/or below it.

To achieve this preferred orientation of the lead on the storage device, the body of the storage device preferably includes a substantially elongate backbone and at least one substantially elongate tine of comparable length, interconnected thereto in a substantially parallel arrangement.

In order to effect the preferred configuration of the storage device, the elongate backbone and the tine of the body both include a free top distal end, whilst the bottom distal end of each is interconnected to form the substantially U-shaped channel. The interconnecting portion of the body defines the width of the channel at the bottom of the channels U-shape, such that the channel complements the width/diameter of the lead.

It should be appreciated that the present invention lends itself to use of more than one tine with one or more central backbones. The number and arrangement of the tines relative to one or more central backbone(s) will thus determine desired variability in the length of lead able to be stored on the storage device, or the number of separate leads able to be stored. Where additional tines are included, the additional tines are arranged relative to the central backbone(s) so as to create a relatively seamless extension to the storage capacity of the overall combined structure.

In one preferred embodiment of the present invention this may be achieved by the inclusion of two tines located on opposite sides of the central backbone, but all being aligned in the same plane. In yet other embodiments, the storage device may be configured to have the tines set to protrude from the central backbone with a defined angle of up to 90 degrees between the adjacent tines. Irrespective of the arrangement and number of tines, the combined effect is to provide a substantially seamless extension to the storage capacity of the storage device.

The storage device may also be configured to take any appropriate shape as required to effect the preferred strength to support the weight of the lead. However, of critical importance is the defined distance of the U-shaped channel created between the backbone and the tine. Depending on the dimensions of the lead stored on the storage device, the width of the channel may vary from one embodiment to another. However, it is important that the channel be the same defined width for the substantial length of the channel receiving the lead(s).

To contribute to maintaining the preferred shape of the storage device when loaded with a lead, latching apparatus may be used. The latching apparatus also serves to secure the lead on the storage device and minimises the likelihood of the lead unwinding from the storage device.

The latching apparatus is preferably pivotally attached to a portion of the body of the storage device and is able to operate between a latched and an unlatched position. When in an unlatched position the lead may be fed onto the storage device. When in the latched position removal of the lead is limited, or the lead and device are ready to be stored away.

In preferred embodiments of the present invention, the latching apparatus is substantially looped-shape, so as to be able to pass over the top of the central backbone, or the tine, as required. The dimensions of the loop of the latching apparatus are preferably defined to both accommodate the width of the backbone, or tine, as relevant, yet also include allowance for the width of the channel. When the latch is pivoted closed the latch serves

to minimise the likelihood of the tine and backbone splaying apart under the weight or pressure of the lead within the storage channel.

It should be appreciated that in variations to the embodiments of the storage device, the latching apparatus may in fact also serve as a handle means to be used to carry the storage device to a location where the lead is to be used. In addition, the latching apparatus may include a means to enable the storage device to be hooked up for storage.

In order to enable the latching apparatus to pivot, the latching apparatus includes at least one aperture capable of alignment with a complementary aperture on a tine, or on the backbone. A pivoting means, such as a pin and spring clip, a cotter pin, a rivet, a nut and bolt arrangement, or comparable available means may be used. Thus when the pivoting means is engaged with in-line apertures, the latching means is fitted to the body of the storage device.

It is important to effect firm interconnection which allows appropriate pivoting, but not so much as to enable sloppy movement of the latching apparatus relative to the backbone, or tine, which may negatively impact on the appropriate latching required, as well as resulting in wear around the internal surface of the apertures which may necessitate replacement of the latching apparatus, or pivoting means.

Whilst one latching apparatus has been described in relation to the present invention, it should be appreciated that any other suitable latching apparatus, or a combination of latching and/or handle means may be employed, or adapted for use, with the storage device.

The same affixing, pivoting and operational description is also relevant to the storage device in the instance where an embodiment also, or instead, includes a handle. Where embodiments do include a specifically designated handle, the handle enables the storage device to be gripped to loop the lead on, or off, the device, enables the device to be

carried to locations where the lead is required to be used and also provides a means to hang the storage device up for storage of either or both the storage device and the lead.

The handle of some embodiments may include specifically designed finger groves to improve the comfort of gripping the handle.

The description of the present storage device has been limited so far to the use of a storage device with a backbone and tine of fixed length. In some embodiments, where lighter leads may be required to be stored, increased capacity of storage may be effected with a body in which for example the backbone is substantially longer than the tine, but the tine may be telescopically extended to increase its length to that of the length of the backbone. Such an extension would only be employed as required, but this embodiment provides the flexibility and adjustability to accommodate varying lengths of leads that would otherwise be accommodated by a storage device having multiple tines. Preferably such telescopic adjustments would be made incrementally and with relative ease.

Alternatively, extension sleeves may be added to the tine to provide the desired adjustability. Preferably, such adjustment would not be time intensive, would not require complex additional pieces of machinery, specialist knowledge, or tools and would offer an effective adjustment means.

Preferred embodiments of the present invention are manufactured from plastics materials using moulds. However, other methods of construction and varying materials may be used. For example, the device may be made from stainless steel, glass reinforced plastics and so forth.

The choice of materials is primarily dictated by their strength, durability and in some cases an emphasis may be on weather-resistance, or the ability to sterilise the device for purposes such as use in hospitals and other sterile environments. The cost of the various materials is also a consideration, but where the device is used in specialised areas, it may be necessary to produce high quality, sterile, stainless steel versions, irrespective of cost.

The devices may be manufactured via any appropriate means, including being injection moulded, rotamoulded, welded, or cast. The choice of manufacturing options is dependent on the materials used, the final designated use of the device and the ease of production.

As can be appreciated from the above description, the feature of the adjustments to the storage device obtained through the numerous alternative positions of more than one tine relative to the central backbone(s) of the present invention and the option to extend the length of the tines, provides an advantage over prior art systems which usually have a fixed capacity.

The storage device also potentially therefore provides the benefits of being adapted to store chords, flexes, leads, tubes, or hoses of varyingly length, or varying numbers of separate leads.

In addition, the storage device is easy to operate, transport, or store and requires minimum time and physical requirements on the part of the user.

The storage device also provides a system whereby stored chords, flexes, hoses or leads are stored in a manner that, when required to be used, are removed from the device without a resulting tangled mess common to prior art system, as a result of the lead being sequentially stacked one loop at a time on top of the adjacent loop below it. Accordingly as the lead is unlooped, it does not have the opportunity to become tangled up with other loops on the storage device.

As far as safety issues are concerned the present invention potentially minimise damage to the integrity of the hose, lead, flex, tube, or chord as the lead is easy to hang up on the storage device and so is not left on the ground where it may be damaged. Further, the likelihood of electrical resistance causing overheating of an electrical lead and potentially damaging the insulation of the lead, may be minimised should a person use the lead whilst still partially wound on the storage device. The present invention does not advocate the general use of coiled extension leads. However, in the present invention the

manner in which the lead is looped on the device, means there are fewer adjacent loops in close proximity, so the potential for electrical resistance and the ensuing coil effect may be reduced. Accordingly, where the lead is used whilst still wound on the device, the issue of safety to the user is less problematic than when coiled extension leads are used whilst retained on typical prior art reel-type devices. Nevertheless, the user is required to practice safe use of the device and ensure that the loops of the lead, when stored on the device, are not so tightly wound as to create the potential for the coil effect to occur.

Finally, the present invention offers a safe alternative to the storage and use of electrical extension leads, in particular.

As can be appreciated variations to and from the above described embodiments may be made without deviating from the scope of the present invention.

It should further be appreciated a variety of different embodiments, uses, and applications of the present invention exist, even within the ambit of the above described storage system.

A specific embodiment for the present invention will now be given by way of example only, to help better describe and define the present invention. However, describing one embodiment should not be seen as limiting the scope of this invention.

Brief Description of Drawings

Further aspects of the present invention will become apparent from the following description, given by way of example only and with reference to the accompanying drawings in which:

Figure 1 is a front perspective view of the storage device in accordance with one preferred embodiment of the present invention; and

Figure 2a-c are a top plan view, a side view and a back plan view of the storage device of Figure 1 in accordance with that preferred embodiment of the present invention; and

Figure 3 is a back plan view of the storage device of Figures 1 and 2 showing an electrical extension lead stored by the storage device, in accordance with that preferred embodiment of the present invention; and

Figure 4 is a side front perspective view of the storage device in accordance with a further preferred embodiment of the present invention in which two tines are included; and

Figure 5a-c are a top plan view, a side view and an front plan view of the storage device of Figure 4 in accordance with that preferred embodiment of the present invention; and

Figure 6a, b are a side view and a front plan view of the storage device in accordance with a further preferred embodiment of the present invention.

Best Modes for carrying out the Invention

With reference to the diagrams (Figures 1 to 6b) by way of example only, there is provided a storage device (generally indicated by arrow (1)). Whilst the storage device is described and referenced for use with electrical extension leads, it should be appreciated this invention may have application outside of this field.

Accordingly, Figures 1 to 3 illustrate one preferred embodiment of the present invention, where the storage device 1 is configured to store at least one lead 2.

The storage device includes a body 3, which includes a substantially elongate backbone 4 and at least one substantially elongate tine 5 interconnected thereto in a substantially

parallel arrangement, but separated therefrom by a defined distance 6 to form a substantially uniform U-shaped channel 7.

The storage device also includes latching apparatus 8 to maintain the defined distance 6 between the backbone 4 and the tine 5 during storage of a lead 2 by the storage device 1.

The storage device 1 also optionally includes a handle 9.

The elongate backbone 4 and the tine 5 of the body both include a free top distal end 10, and 11 respectively, whilst the bottom distal end provides an interconnecting portion 12 to form the substantially U-shaped channel 7.

The U-shaped channel 7 formed between the backbone 4 and the tine 5 and the defined distance 6 between them is defined by the diameter, or width of the lead 2, such that only one width of the lead is fed down the channel 7 at any one time.

Accordingly, subsequent looping of the lead 2 enables further widths of the lead to be fed down the channel 7 such that with each subsequent loop the section of lead within the channel 7 sits atop an adjacent previous looped section of the lead 2 as shown in Figure 3. The electrical lead stored on the storage device of the present invention is preferably loosely looped with each successive loop only touching a portion of a loop of the lead directly above and/or below it.

The latching apparatus 8 is preferably pivotally attached to a portion of the body of the storage device and is able to operate between a latched position as illustrated in Figures 2a, 2b and 6b an unlatched position, as illustrated in Figure 1 and 6a. When in an unlatched position the lead 2 may be fed onto the storage device. When in the latched position removal of the lead is limited, or the lead and device are ready to be stored away.

The latching apparatus 8 is attached towards the top distal end 10 or 11 of either the backbone 4 or the tine 5, respectively. A loop portion 13 of the latching apparatus 8 is

capable of looping over the top distal end of the tine, or backbone portion, to which the latching apparatus 8 is not attached. The dimensions of the loop 13 of the latching apparatus 8 are preferably defined to both accommodate the width of the backbone 4, or tine 5, as relevant, yet also include allowance for the width of the channel 7. In operation, the latching apparatus 8 maintains the defined distance 6 between the backbone 4 and the tine 5 during storage of a lead 2 by the storage device, via preventing the weight of the lead 2 stored within the channel 7 forcing the backbone 4 and tine 5 to splay apart from each other. The latching apparatus 8 also serves to secure the lead 2 on the storage device 1 and minimises the likelihood of the lead unwinding from the storage device.

In some embodiments, the latching apparatus 8 may also be used as a handle 9 for gripping the storage device in use, or for hanging the storage device when being stored, or, a handle 9 may operate as the latching apparatus 8. Such an alternative is illustrated in Figures 6a and 6b.

In order to operate as required either or both the latching apparatus 8 and/or the handle 9 are pivotable with respect to the backbone 4 or the tine 5 to which they are attached. Therefore, the latching apparatus 8 includes at least one aperture capable of alignment with a complementary aperture on a tine 5 or the backbone 4. A pivoting means 14, such as a pin and spring clip, a cotter pin, a rivet, a nut and bolt arrangement, or comparable available means may be used. Thus when the pivoting means 14 is engaged with the in-line apertures, the latching apparatus 8 is fitted to the body 3 of the storage device.

It is important to effect firm interconnection which allows appropriate pivoting, but not so much as to enable sloppy movement of the latching apparatus 8 relative to the backbone 4, or tine 5, which may negatively impact on the appropriate latching required, as well as resulting in wear around the internal surface of the apertures which may necessitate replacement of the latching apparatus 8, or pivoting means 14.

The same affixing, pivoting and operational description is also relevant to the storage device in the instance where an embodiment also, or instead, includes a handle 9, as

illustrated in Figure 1 and 6a. Where embodiments do include a specifically designated handle 9, the handle 9 enables the storage device to be gripped to loop the lead on or off the device, enables the device to be carried to locations where the lead is required to be used and also provides a means to hang the storage device up for storage of either or both the storage device and the lead. The handle 9 of some embodiments may include specifically designed finger grooves, or similar as illustrated in the handles 9 of embodiments illustrated by Figures 5c and 6b, to improve the comfort of gripping the handle 9.

Figures 4 to 5c illustrate a further embodiment of the storage device where additional tines 5 may be included relative to the backbone 4, to accommodate separate leads 2 or leads of increased length which can not be accommodated within the channel 7 of a single tine version of the storage device. The number and arrangement of the tines relative to one or more central backbone(s) will thus determine the desired variability in the length of lead able to be stored on the storage device, or the number of separate leads able to be stored. This embodiment of the present invention provides a method of varying the lead storage capacity of the storage device for storing leads.

Where additional tines are included, the additional tines are arranged relative to the central backbone(s) so as to create a relatively seamless extension to the storage capacity of the overall combined structure. Figures 4 to 5c illustrate an embodiment of the present invention where two tines are located on opposite sides of the central backbone but all are aligned in the same plane. In yet other embodiments which have not been illustrated, the storage device may be configured to have the tines set to protrude from the central backbone with a defined angle of up to 90 degrees between the adjacent tines.

With a single tine version of the invention as illustrated in Figure 1 to 3, the body of the storage device 1 is designed to complement the type and length of the lead 2 required to be stored thereon. Accordingly, the length of the backbone 4 and the length of the tine 5 is determined to accommodate a preferred number of loops of the lead 2 stacked sequentially on top of each other as the lead is looped on to the storage device 1. In the

illustrated embodiments the storage device is represented with a backbone 4 and tine 5 of fixed length.

However, in some embodiments which are not illustrated, increased capacity of storage may be effected with a body 3 in which for example the backbone 4 is substantially longer than the tine 5, but the length of the tine 5 may be extendable, such as via telescopically or via the use of extensions which may be added to the tine 5 to provide the desired adjustability. Any such adjustment is preferably not time intensive, would not require complex additional pieces of machinery, specialist knowledge, or tools and would offer an effective adjustment means.

Whilst the storage device may be configured to take any appropriate shape as required to effect the preferred strength to support the weight of the lead, it is the defined distance 6 of the U-shaped channel 7 created between the backbone 4 and the tine 5 that is of most importance. Depending on the dimensions of the lead stored on the storage device, the width 6 of the channel 7 may vary from one embodiment to another. However, it is important that the channel be the same defined width 6 for the substantial length of the channel receiving the lead(s).

The storage device 1 provides a system which is easy to operate, transport, or store and requires minimum time and physical requirements on the part of the user. It also provides a system whereby stored chords, flexes, hoses or leads 2 are stored in a manner that, when required to be used, are removal from the device 1 without a resulting tangled mess common to prior art system, as a result of the lead being sequentially stacked one loop at a time on top of the adjacent loop below it. Accordingly when it comes to unlooping the lead, it does not have the opportunity to become tangled up with other loops on the storage device. The handle means of the storage device enables the device to be carried throughout the unlooping process, to further assist with placement of the lead as and where required. Finally, the present invention offers a safe alternative to the storage and use of electrical extension leads, in particular.

It should be appreciated that the above description relates to the embodiments illustrated in Figures 1 to 6b. However, describing these embodiment only, should not be seen as limiting the scope of this invention, nor does it limit variations to and from the above described embodiments which may be made without deviating from the scope of the present invention.

It should also be understood that the term "comprise" where used herein is not to be considered to be used in a limiting sense. Accordingly, 'comprise' does not represent nor define an exclusive set of items, but includes the possibility of other components and items being added to the list.

This specification is also based on the understanding of the inventor regarding the prior art. The prior art description should not be regarded as being an authoritative disclosure of the true state of the prior art but rather as referring to considerations in and brought to the mind and attention of the inventor when developing this invention.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof.

VAUGHAN JOHN HUTCHINSON

By his attorneys

Denise Tyner-Harding

PIPERS CENTRAL

Figure 1

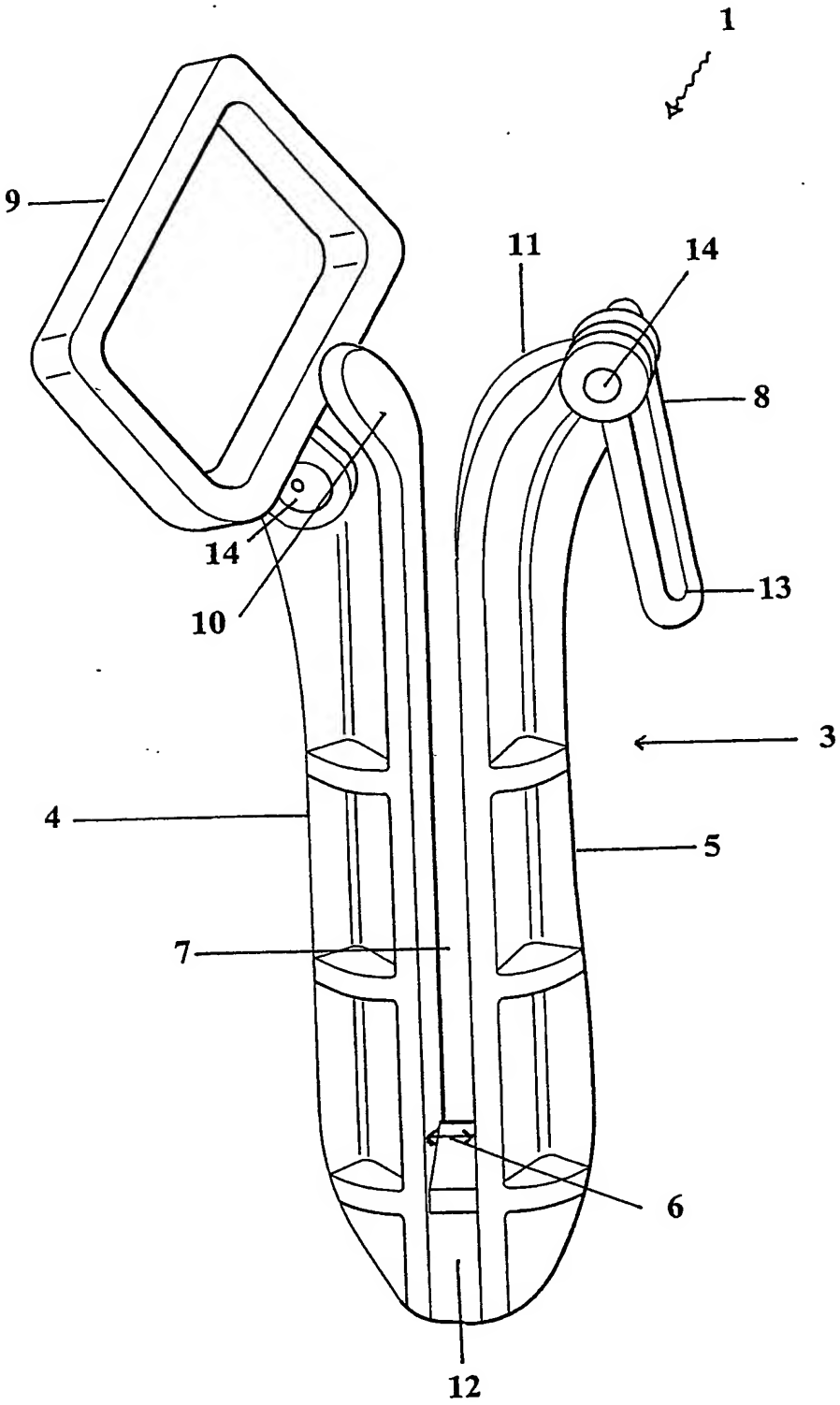

Figure 2a

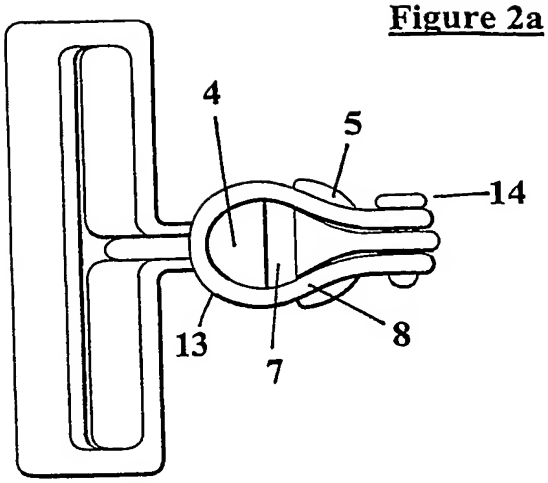

Figure 2c

Figure 2b

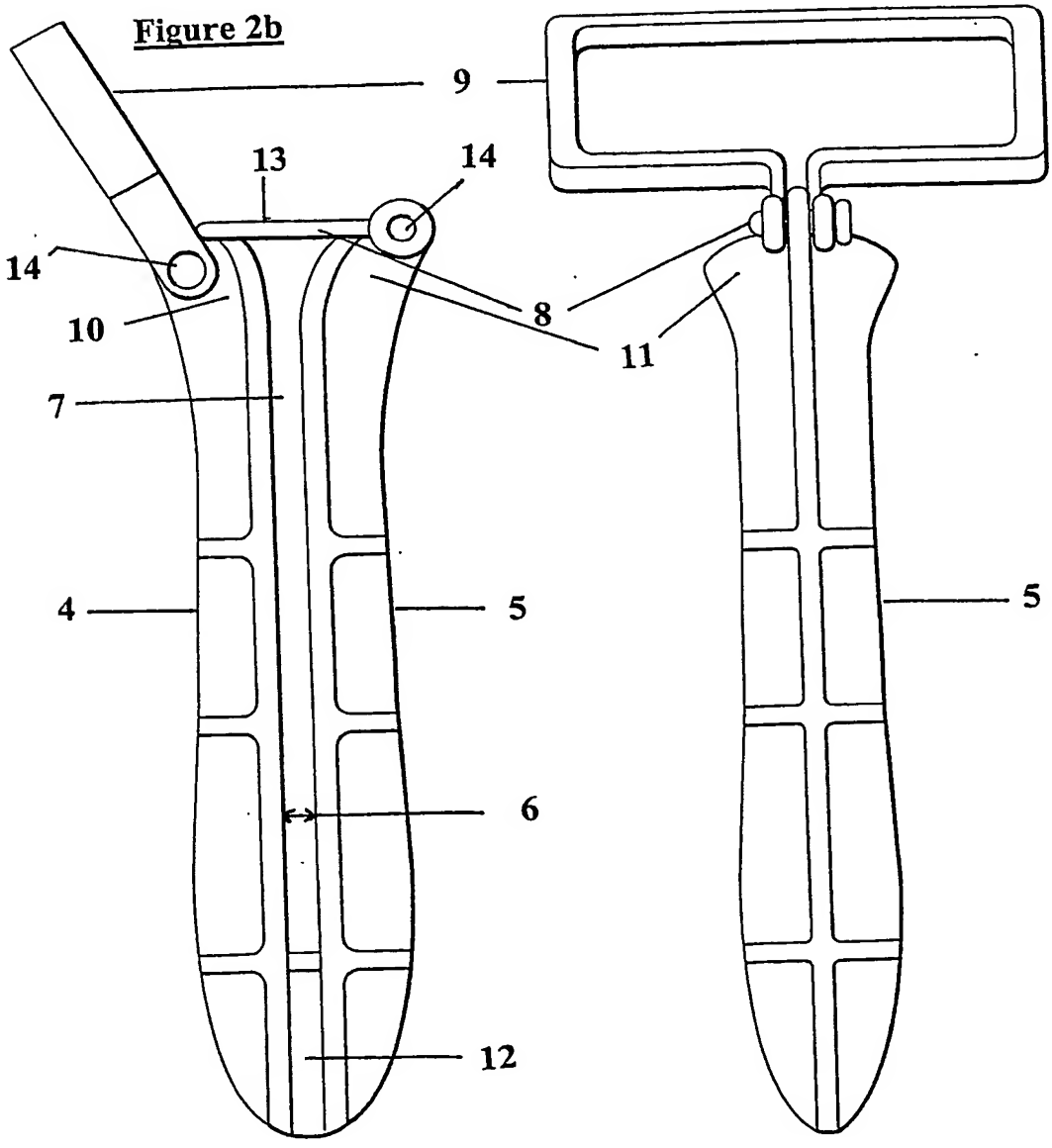

Figure 3

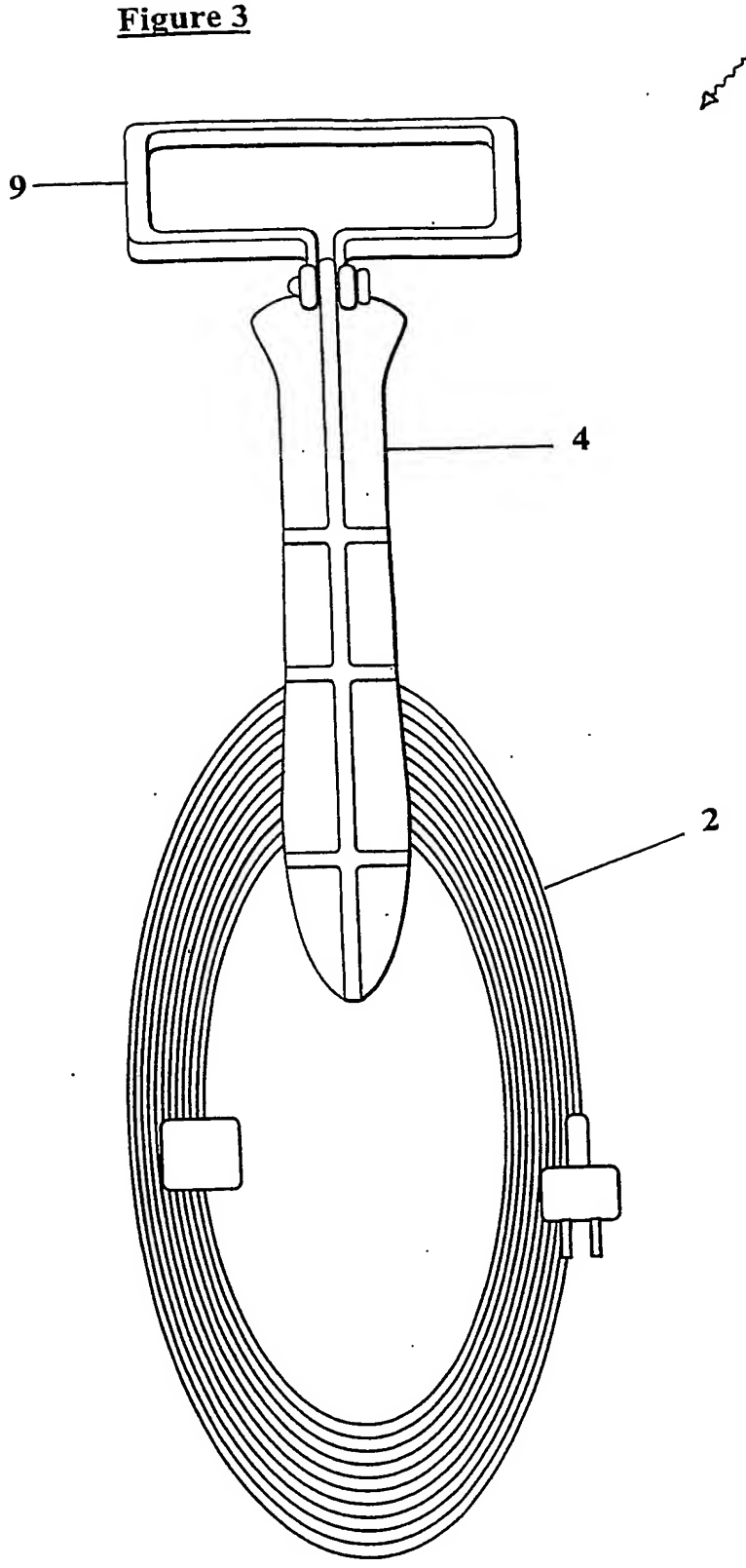

Figure 4

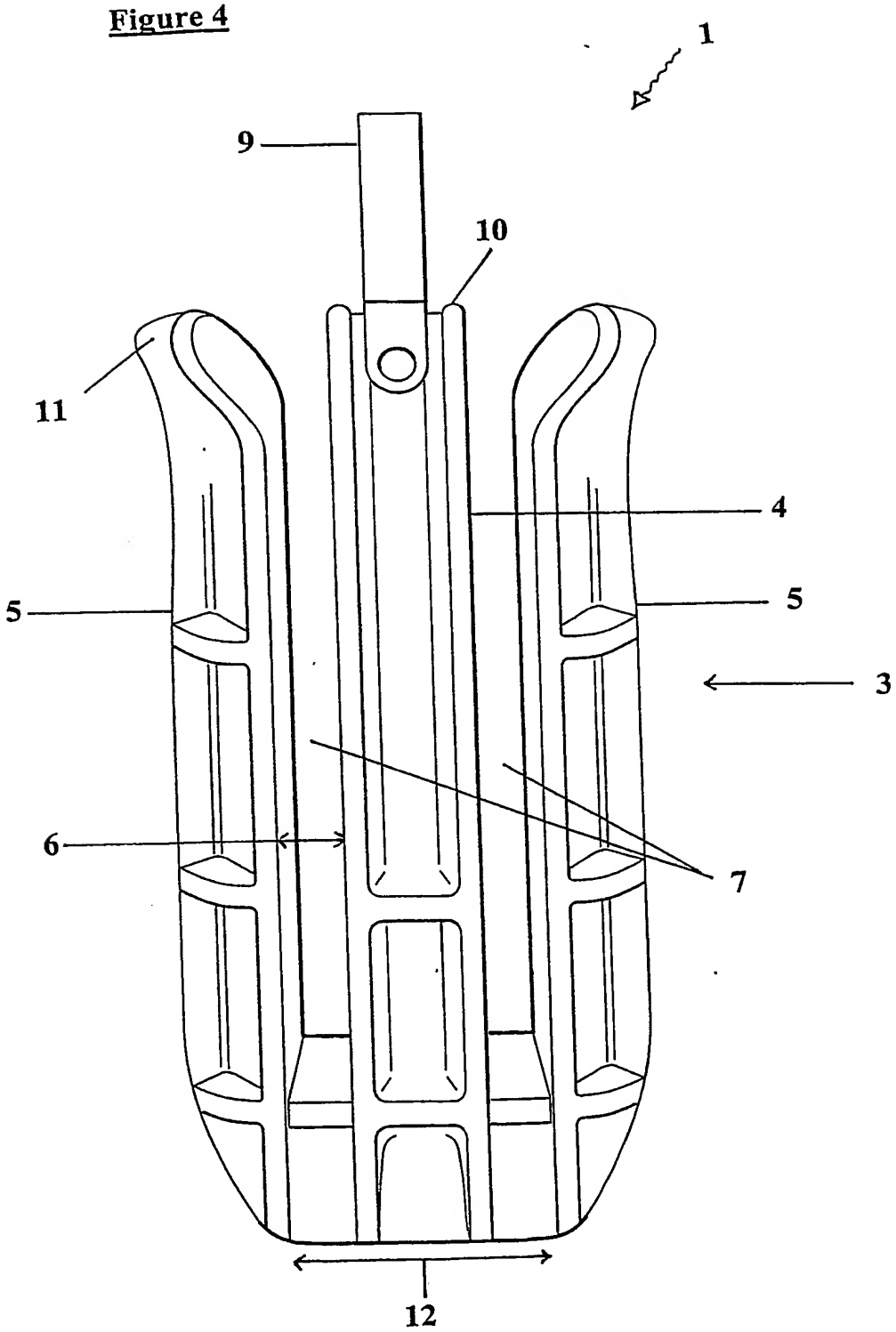

Figure 5a

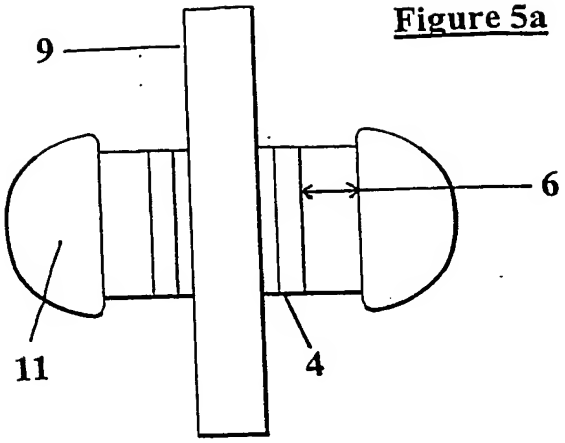

Figure 5c

Figure 5b

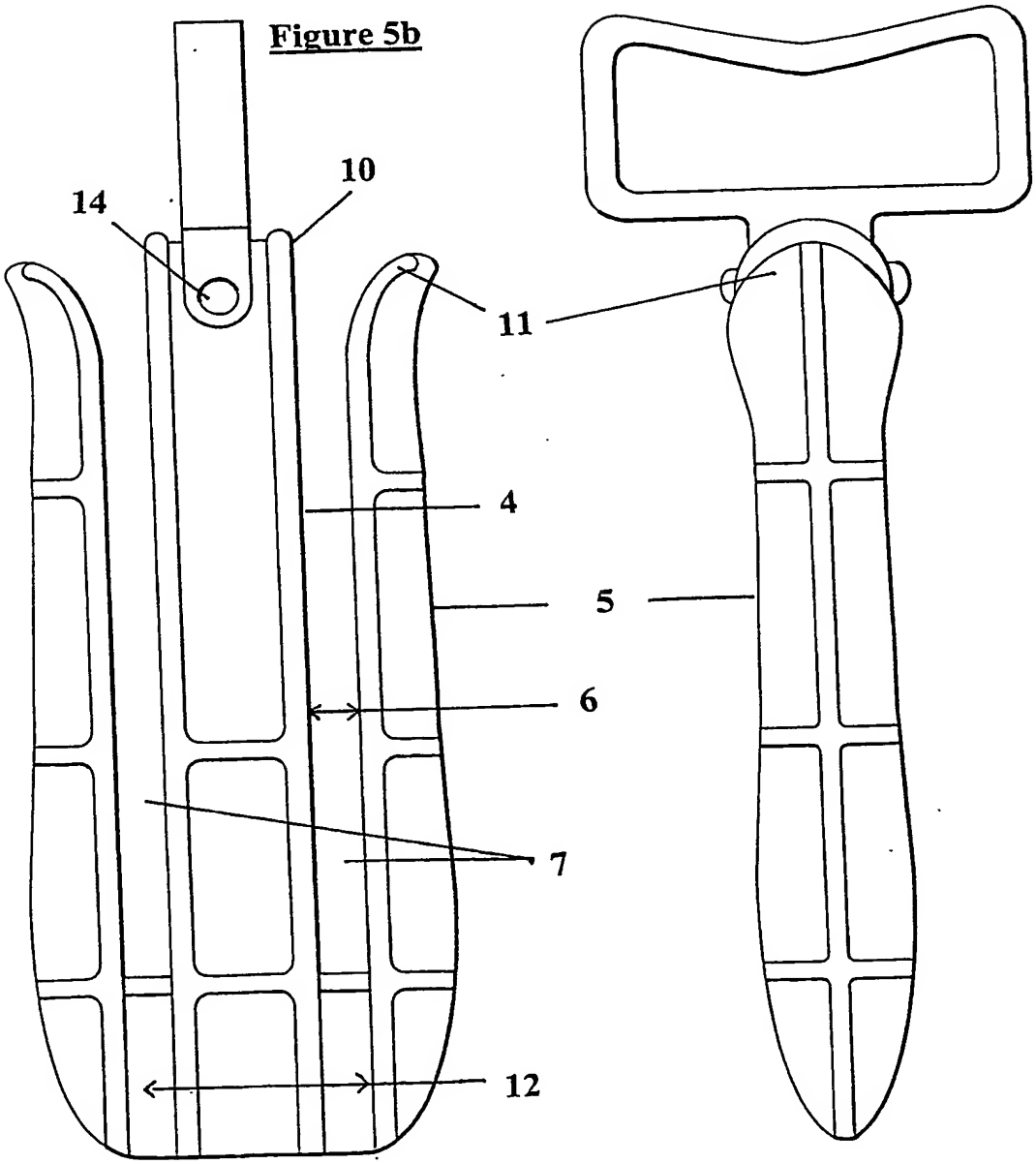

Figure 6a

Figure 6b